

REMARKS

This response is filed under 37 C.F.R. §1.116 after final rejection of all claims, after filing a Notice of Appeal, but before filing an Appeal Brief.

Claims 47 – 147 are pending in the application. Claims 63 – 65, 80 – 140, 142, 144, 145, and 147 are withdrawn from consideration due to an earlier restriction requirement. The pending claims remaining for consideration and subject to examination on the merits are claims 47 – 62, 66 – 79, 141, 143, and 146.

Claim 141 has been amended to present the rejected claim 141 in better form for appeal.

Claim Interpretation

The Examiner has continued to allege that, in accordance with MPEP 2115, claims 66-79 do not further limit claim 47 because these claims relate to materials or articles worked upon by the claimed apparatus. Applicants note that claims 66-79 were amended in Applicants response of December 2005 to clarify the relationship between the materials and the claimed apparatus. As amended, claims 66-79 are directed to embodiments in which the claimed apparatus further comprises particular samples. As such, Applicants contend that claims 66-79 are distinguishable from the cases and fact patterns enumerated in MPEP 2115. Specifically, claims 66-79 are directed to apparatuses that explicitly include a particular sample as an element of the apparatus, thus further defining the claimed apparatus. Accordingly, claims 66-79 do not provide a mere intended use of the claimed apparatus, but rather set forth an additional element of the claimed apparatus.

35 U.S.C. §103(a)

Claims 62, 141, and 146 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Murry (US Patent No. 3,614,069; the “‘069” patent) in view of Berger et al. (US Patent No. 5,484,573; the “‘573 patent”). Applicants respectfully traverse this rejection.

The criteria for establishing a *prima facie* case of obviousness are detailed in MPEP 2142-2143. Pursuant to MPEP 2142, “To establish a *prima facie* case of obviousness, three

basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

Claim 141 is the rejected independent claim. Applicants have amended claim 141 by replacing "flowing" with "continuously transporting" to more particularly point out Applicants' invention. According to the American Heritage College Dictionary, 3rd ed., page 523 (copy of the relevant page is attached to this submission as Exhibit A) "to flow" means "[t]o move or run smoothly with unbroken continuity", "to circulate", "to move steadily", etc. "Flowing" is therefore entirely different from "easily moving a sample in and out of the vessel", as alleged in the Office Action (page 7, lines 15 – 16). Applicants submit that the amendment to claim 141 is for clarification only and does not require a new search. Applicants submit that the scope of this claim is not narrowed by this amendment.

Claim 146 which depends from claim 141 recites that the reaction vessel is implemented as a conduit. One such embodiment is illustrated in FIG. 7 and described in detail in Section D (Sterilizing) on page 42, line 24, to page 44, line 30. None of the references of record teach or suggest a reaction vessel implemented as a conduit.

Murry '069 teaches an ultrasonic method and apparatus for ultrasonic material processing, such as cavitation, emulsification and mixing. Murry's apparatus includes at least two ultrasonic transducers which are mounted to a wall 12 of a tank 10. Tank 10 holds the substances to be intermixed. A sample 11, such as a single liquid, can be placed in the tank, either from the top of tank 10 or (see FIG. 3) through loading plug 51 of tank 50. Murry '069 also discloses mixing and emulsification by using liquid jets, for example in chamber 62 (FIG. 4), or air whistles (FIG. 7). However, Murry '069 fails to disclose or suggest the combination of continuously transporting samples and applying sonic energy.

Berger '573 discloses a reactor for carrying out chemical reactions which includes multiple ultrasonic transducers 15 and a vessel 10 with filling ports 11 and 12 and a bottom outlet valve 8. Berger contains no disclosure or suggestion to continuously transport (or flow) samples into and out of the reaction vessel.

Applicants contend that the cited references fail to satisfy the criteria for a *prima facie* case of obviousness. Specifically, Applicants contend that the cited references fail to teach or suggest the incorporation in the reaction vessel of an inlet and an outlet for continuously transporting samples in and out of the reaction vessel. Because the combination of references fails to teach or suggest each and every limitation of the claimed invention, the cited references fail to undermine the patentability of the claimed invention. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 47 – 49, 51 – 52, 66 – 79, and 143 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Berger '573 in view of Murry '069, and Ganguly et al. (US Patent No. 4,926,871; the “‘871” patent).

Claim 47, the independent claim from which the others depend, is directed to an apparatus for treating one or more samples comprising a reaction vessel for holding the one or more samples and including at least one inlet for flowing the one or more samples into the reaction vessel and at least one outlet for flowing the one or more samples out of the reaction vessel; and an acoustic energy source for providing at least one focused acoustic field having a frequency of between about 100 kilohertz and about 100 megahertz to the one or more samples while the one or more samples are in the reaction vessel, wherein the acoustic energy source is a single transducer.

The Office Action alleges that the Berger '573 patent teaches all of the elements of this claim, with the exception of an acoustic field having a frequency of between about 100 kHz and about 100 MHz, and the acoustic energy source being a single transducer. The Office Action then relies on Murry '069 as disclosing frequencies within the frequency range and further cites Ganguly '871 as teaching the use of a single transducer.

The teachings of Berger '573 and Murry '069 are discussed above. Ganguly '871 discloses a scanhead 10 for medical non-invasive diagnostic purposes, e.g., for measuring the volume of urine in a human bladder. The scanhead 10 may include several transducers or a single focused transducer. Ganguly does not teach or suggest providing acoustic energy to a reaction vessel for treating samples; instead, Ganguly teaches merely an imaging application having entirely different energy and focusing requirements.

As to motivation to combine, the Office Action suggests that it would have been obvious to modify the apparatus taught in Berger '573 and Murry '069 with a single focused transducer, because it was known in the art to simplify a device by minimizing the number of elements in the device, as exemplified by Ganguly '871.

However, these references are not properly combinable. There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998).

Ganguly '871 teaches a sonic device operating by emitting weak focused signals that do not heat, disrupt, or otherwise alter human tissue and detecting a return signal. However, Murry's and Berger's apparatuses operate by entirely different principles. Instead of detecting sonic waves reflected from a tissue border or interface in the human body to generate information about the geometry of the interface, as in Ganguly '871, Murry '069 and Berger '573 apply focused acoustic energy to treat, i.e., alter a physical or chemical state of, one or more samples. The result is not an image or other information, but an altered state of the sample. Since the two devices use different physical principles, i.e., imaging through reflection in Ganguly '871 versus mixing/cavitation/ emulsification in Murry '069 and Berger '573, to generate different types of effects in very different ways, one of ordinary skill in the art would not be motivated to combine these references. Indeed, there is no suggestion that the reaction processes would be improved (or even possible) by employing a single transducer, and in fact both Murry '069 and Berger '573 advocate using at least two, if not more, transducers, thus teaching away from the use of a single transducer. Moreover, contrary to the allegations of the Office Action, one of ordinary skill in the art would not be motivated to use a single transducer as there is no apparent technical

principle that would improve upon the results disclosed by Murry '069 and Berger '573. Without a motivation to combine, a rejection based on a *prima facie* case of obviousness is improper, and the level of skill in the art cannot be relied upon to provide the suggestion to combine references. (*Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999) and *In re Kotzab*, 217 F.3d at 1371, 55 USPQ2d at 1318.) (MPEP 2143.01(I))

Indeed, substituting the transducers used by Berger '573 and Murry '069 with the transducer used by Ganguly '871 would result in an apparatus that is not suitable for the intended purpose of any of these references (MPEP 2143.01(V)); instead, the combination would be capable only of imaging the contents of the reaction vessel, which is unlikely to generate any useful information or result.

Thus, these references, whether taken singly or in combination, fail to teach all the elements of claim 47. To the contrary, the references teach away from the proposed combination, and in fact the combination would be unsuitable for any purpose contemplated by these references. Accordingly, the proposed combination cannot render the claim invention obvious.

In addition, claim 143, which depends from claim 47, recites that the reaction vessel is implemented as a conduit. One such embodiment is illustrated in FIG. 7 and described in detail in Section D (Sterilizing) on page 42, line 24, to page 44, line 30. None of the references of record teach or suggest a reaction vessel is implemented as a conduit. Therefore, in addition to the arguments detailed above, which apply with equal force to claim 143, the proposed combination of references fails to teach all the elements of claim 143. As a result, the proposed combination of references cannot render this claim obvious.

Claims 50 and 53-61 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Berger '573 patent in view of Murry '069 and Ganguly '871, and further in view of Peltzer (U.S. Patent No. 5,993,671; the "'671 patent"). Applicants traverse this rejection and contend that the rejection is moot in light of the amended claims.

Applicants' arguments detailed above are equally applicable to this ground of rejection. Peltzer '671 contains no disclosure that remedies any of the deficiencies noted above.

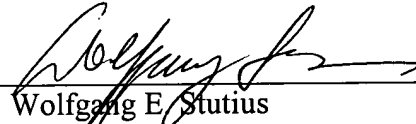
Accordingly, the combination of the cited references fails to render the claimed invention obvious. Reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that the pending claims are in condition for allowance. Early and favorable reconsideration is respectfully solicited. The Examiner may address any questions raised by this submission to the undersigned at 617-951-7000. Should an extension of time be required, Applicants hereby petition for same and request that the extension fee and any other fee required for timely consideration of this submission be charged to **Deposit Account No. 18-1945 under Order No. CVRS-P04-001.**

Respectfully Submitted,

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THE
AMERICAN
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THIRD EDITION

Dictionary



HOUGHTON MIFFLIN COMPANY

Boston • New York

See Usage Note at **founder**¹ - *n.* The act of floundering.
[Prob. alteration of FOUNDER¹.]

floun·der² (floun/'dər) *n., pl.* **flounder** or **-ders**. Any of various marine flatfishes of the families *Bothidae* and *Pleuronectidae*, which include important food fishes. [ME < AN *floundre*, of Scand. orig. See **flat**·².]

flour (flour) *n.* **1.** A fine powdery foodstuff obtained by grinding and sifting the meal of a grain, esp. wheat, used chiefly in baking. **2.** Any of various similar finely ground or powdered foodstuffs, as of cassava, fish, or bananas. **3.** A soft fine powder. - *tr.v.* **floured**, **flour·ing**, **flours**. **1.** To cover or coat with flour. **2.** To make into flour. [ME. See **FLOWER**.] - **flour·y** *adj.*

flour·ish (flur/'ish, flūr'·) *v.* **-ished, -ish·ing, -ish·es.** - *intr.* **1.** To grow well or luxuriantly; thrive. **2.** To do or fare well; prosper. **3.** To be in a period of highest productivity, excellence, or influence. **4.** To make bold, sweeping movements. - *tr.* To wield, wave, or exhibit dramatically. - *n.* **1.** A dramatic or stylish movement, as of waving or brandishing. **2.** An embellishment or ornamentation: *many rhetorical flourishes*. **3.** An ostentatious act or gesture. **4.** *Mus.* A showy or ceremonious passage, such as a fanfare. [ME *florishen* < OFr. *florir*, *floriss* < VLat. **flōrire* < Lat. *flōrēre* < *flōs*, *flōr*, flower. See **bhel**·^{3a}.] - **flour'ish·er** *n.*

Syns: *flourish, brandish, wave.* The central meaning shared by these verbs is "to swing back and forth boldly and dramatically": *flourished her newly signed contract; brandishing a sword; waving a baton.*

flout (flout) *v.* **flouted**, **flout·ing**, **flouts.** - *tr.* To show contempt for; scorn: *flouted convention.* See Usage Note at **flaunt**. - *intr.* To be scornful. - *n.* A contemptuous action or remark; an insult. [Perh. < ME *flouten*, to play the flute < OFr. *flauter* < *flaute*, flute: See **FLUTE**.] - **flout'er** *n.* - **flout'ing·ly** *adv.*

flow (flō) *v.* **flowed**, **flow·ing**, **flows.** - *intr.* **1.a.** To move or run smoothly with unbroken continuity, as a fluid. **b.** To issue in a stream; pour forth. **2.** To circulate, as the blood in the body. **3.** To move with a continual shifting of the component particles: *Wheat flowed into the bin*. **4.** To proceed steadily and easily. **5.** To exhibit a smooth or graceful continuity. **6.** To hang loosely and gracefully. **7.** To rise. Used of the tide. **8.** To arise; derive. See **Syns** at **stem**¹. **9.a.** To abound or teem. **b.** To stream copiously; flood: *Contributions flowed in*. **10.** To menstruate. **11.** To undergo plastic deformation without cracking or breaking. Used of rocks, metals, or minerals. - *tr.* **1.** To release as a flow. **2.** To cause to flow. - *n.* **1.a.** The act of flowing. **b.** The smooth motion characteristic of fluids. **2.a.** A stream or current. **b.** A flood or an overflow. **c.** A residual mass that has stopped flowing: *a hardened lava flow*. **3.a.** A continuous output or outpouring. **b.** A continuous movement or circulation: *a flow of paperwork*. **4.** The amount that flows in a given period of time. **5.** The rising of the tide. **6.** Continuity and smoothness of appearance. **7.** A general movement or tendency. **8.** The sequence in which operations are performed. **9.** An apparent ease or effortlessness of performance. **10.** Menstrual discharge. [ME *flouen* < OE *flōwan*. See **pleu**·².] - **flow'ing·ly** *adv.*

flow·age (flō'ij) *n.* **1.** The act of flowing or overflowing. **2.a.** The state of being flooded. **b.** A body of water formed by usu. deliberate flooding. **3.** An outflow or overflow. **4.** The gradual plastic deformation of a solid body, as by heat.

flow chart also **flow·chart** (flō'chärt') *n.* A schematic representation of a sequence of operations.

flow·er (flou/'ər) *n.* **1.a.** The reproductive structure of some seed-bearing plants, characteristically having either specialized male or female organs or both male and female organs enclosed in an outer envelope of petals and sepals. **b.** Such a structure having showy or colorful parts; a blossom. **2.** A plant that is cultivated or appreciated for its blossoms. **3.** The condition or a time of having developed flowers. **4.** Something, such as an ornament, that resembles a flower in shape, fineness, or attractiveness. **5.** The period of highest development; the peak. **6.** The highest example or best representative. **7.** A natural development or outgrowth. **8.** *flowers.* *Chem.* A fine powder produced by condensation or sublimation of a compound. - *v.* **-ered, -er·ing, -ers.** - *intr.* **1.** To produce a flower or flowers; blossom. **2.** To develop naturally or fully; mature. - *tr.* To decorate with flowers or a floral pattern. [ME *flour*, flower, best of anything, flour < OFr. *flor* < Lat. *flōs*, *flōr*. See **bhel**·^{3a}.] - **flow'er·er** *n.* - **flow'er·less** *adj.*

flow'er·age (flou/'ər-ij) *n.* **1.** Flowers considered as a group. **2.** The process or state of flowering.

flower bug *n.* Any of a group of bugs in the family Anthracoridae, which feed on insects that infest flowers.

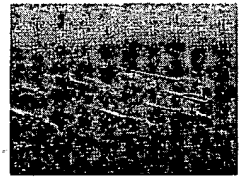
flower child *n.* *Informal.* A hippie, esp. one advocating universal peace and love. - **flow'er·child'** (flou/'ər-child') *adj.*

flow'er·et (flou/'ər-it) *n.* A small flower; a floret.

flower girl *n.* A young girl who carries flowers in a procession.

flower head *n.* **1.** *Bot.* A dense short compact cluster of sessile flowers, as of composite plants or clover. **2.** A very dense grouping of flower buds, as in broccoli and cauliflower.

flow'er·ing *doawood* (flou/'ər-ing) *n.* See **doawood**.



flotilla

On the Indian Ocean

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' (primary);
' (secondary), as in
dictionary (dīk'shə-nēr'ē)

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